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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/994,642	12/19/97	YANAI	T 35.C12444

005514
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LM01/0830

EXAMINER	
TILLERY,R	
ART UNIT	**PAPER NUMBER**
2712	9

DATE MAILED: 08/30/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	08/994,642	YANAI ET AL.	
	Examiner	Art Unit	
	RASHAWN N TILLERY	2712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-34 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) 1 and 2 is/are allowed.

6)☒ Claim(s) 3,5,7,9,11,13,15,17,19,21,23,25,27,29,31 and 33 is/are rejected.

7)☒ Claim(s) 4,6,8,10,12,14,16,18,20,22,24,26,28,30,32 and 34 is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a)☐ All b)☐ Some * c)☐ None of the CERTIFIED copies of the priority documents have been:

1.☐ received.

2.☐ received in Application No. (Series Code / Serial Number) _____ .

3.☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

15)☒ Notice of References Cited (PTO-892)
16)☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17)☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 09 .
18)☐ Interview Summary (PTO-413) Paper No(s). _____ .
19)☐ Notice of Informal Patent Application (PTO-152)
20)☐ Other: .

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

2. The disclosure is objected to because of the following informalities: The word "thinning-out" on pgs. 4, 15 and 18 is miss-spelled ("shinning-out"). Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 3, 5, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noda et al (US4768084) in view of Sakurai et al (US5726707).

Regarding claim 3, Noda discloses an imaging device in Fig. 2 (see col. 3, lines 49-50), a color filter with the color filters arranged in the horizontal and vertical directions (see col. 3, lines 66-67 and Fig. 2 where color filters A, B, C and D are

shown), plural pixels arranged in the horizontal and vertical directions (see Fig. 2, element numbers, 1A-1D, where the pixels are shown corresponding to the color filters and col. 4, lines 1-3).

Noda does not explicitly disclose vertical or horizontal charge transfer units used for transferring electric charges. However, he does reveal the use an equivalent device– MOS -which uses horizontal and vertical signal lines for transferring electric charges. Sakurai shows that it is well known to utilize vertical and horizontal charge transfer units for transferring electric charges (see Fig. 2 element numbers, 202 and 203 where vertical transfer units and a horizontal transfer unit are shown respectively). Therefore, it would have been obvious for one of ordinary skill in the art to modify Noda's design considering that the devices, MOS and CCD, are analogous and thus interchangeable. Noda also does not explicitly disclose an output unit for converting the signal charges from the horizontal unit. Sakurai reveals that it is well known to implement an output unit (see col. 4, lines 21-36 where the signal transfer from vertical to horizontal is discussed and then, the outputted image signal). Therefore, it would have been obvious for Noda to utilize Sakurai's teachings in order to remain consistent with the change in devices- MOS to CCD.

Noda discloses a color filter array comprising an array, in the vertical direction, of a plural units of color filter groups (see Fig. 9). Noda does not specifically reveal each unit comprising "8 rows" however, the fact that there are a large number of rows in a given system, units may be arbitrarily split into a variety of row combinations. Noda also discloses an odd-numbered row composed of an alternate array of a first color filter and

a second color filter in a predetermined order and a second color filter composed of an alternate array of a third and a fourth color filter in a predetermined order (see Fig. 9 where the color filter array is shown).

Noda discloses the image signal of one row outputted as a line-sequential color difference signal of pixels of 4 rows in the vertical direction (see col. 7, lines 40-67 where the line sequential chrominance signals, C_1 and C_2 are discussed).

Regarding claim 5, Noda discloses the signal charges of two predetermined pixels being added and an image signal corresponding to the added signal charges being outputted from the output unit (see col. 4, lines 48-60 where the connection of pixels is discussed).

Regarding claims 11 and 13, Noda discloses the combination of two predetermined pixels of yellow and green and cyan and magenta (see Fig. 9 where the color combinations are shown).

2. Claims 7, 9, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noda et al in view of Sakurai et al in further view of Tanaka et al.

Regarding claim 7, Noda nor Sakurai explicitly disclose taking added signal charges and further adding them with signal charges in the diagonal direction. Tanaka reveals that it is well known to add signal charges in the diagonal direction (see Fig 5). Therefore it would have been obvious to one of ordinary skill in the art to utilize Tanaka's teachings to obtain a more accurate picture. This would ultimately produce a high quality image.

Regarding claim 9, Noda nor Sakurai explicitly disclose combining a method of adding signal charges in the vertical direction and further adding them with signal charges in the diagonal direction and further adding signal charges in the vertical direction. Tanaka reveals that it is well known to combine added charges in the vertical and diagonal directions and further add charges in the vertical direction (see Fig. 1 where the added combinations of, "(Mg + Ye)," in the vertical direction and, "(G + Cy)," in the diagonal direction are further added to signal charges in the vertical direction, "(G + Ye)"). Therefore, it would have been obvious to one of ordinary skill in the art to utilize Tanaka's teachings to obtain a composite image signal. This would ultimately produce a high quality image.

Regarding claims 15 and 17, Noda discloses the combination of two predetermined pixels of yellow and green and cyan and magenta (see Fig. 9 where the color combinations are shown).

3. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Noda et al in view of Udagawa (US5880781).

Regarding claim 19, Noda does not explicitly disclose electrodes connected to every fourth pixel in a vertical direction. However, Udagawa reveals that it is well known to use a four-phase driver to control the read-out of signal charges from the pixels to the vertical charge units (see Fig. 2A). Therefore, it would have been obvious for Noda to utilize Udagawa's teachings in order to remain consistent with the change in devices-MOS to CCD. It is well known in the art that, the function of electrodes in a CCD, are to

control the transfer of signal charges from the vertical transfer units to the horizontal charge transfer unit.

4. Claims 21, 27 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noda et al in view Sakurai et al in further view of Udawaga.

Regarding claims 21, 27 and 29 Noda nor Sakurai explicitly disclose electrodes connected to every fourth pixel in a vertical direction. However, Udawaga reveals that it is well known to use a four-phase driver to control the read-out of signal charges from the pixels to the vertical charge units (see Fig. 2A). Therefore, it would have been obvious for Noda to utilize Udagawa's teachings in order to remain consistent with the change in devices- MOS to CCD. It is well in the art that, the function of electrodes in a CCD, are to control the transfer of signal charges from the vertical transfer units to the horizontal charge transfer unit.

5. Claims 23, 25, 31 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noda et al in view Sakurai et al in further view of Tanaka et al in further view of Udagawa.

Regarding claims 23, 25, 31 and 33, Noda nor Sakurai nor Tanaka explicitly disclose electrodes connected to every fourth pixel in a vertical direction. However, Udagawa reveals that it is well known to use a four-phase driver to control the read-out of signal charges from the pixels to the vertical charge units (see Fig. 2A). Therefore, it would have been obvious for Noda to utilize Udagawa's teachings in order to remain consistent with the change in devices- MOS to CCD. It is well known in the art that, the

function of electrodes in a CCD, are to control the transfer of signal charges from the vertical transfer units to the horizontal charge transfer unit.

Claims 1 and 2 are allowed.

6. Claims 1 and 2 are allowed.

7. Claims 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32 and 34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art does not teach or fairly suggest an image pickup device with a color filter array comprising of color filter groups of plural units with each unit comprising first to eighth color filter groups in the claimed arrangement.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RASHAWN N TILLERY whose telephone number is 703-305-0627. The examiner can normally be reached on M-F 8-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, WENDY GARBER can be reached on 703-305-4929. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-5359 for regular communications and 703-308-5359 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9048.

RNT
August 22, 2000

Wendy Garber
Supervisory Patent Examiner
Technology Center 2700